

MITIGATION MEASURES AND CONSERVATION ACTIONS APPENDIX

INTRODUCTION

The following Mitigation Measures and Conservation Actions are a compilation of Best Management Practices (BMPs) and/or operating procedures used by the BLM to meet statutory requirements for environmental protection and comply with resource specific Goals and Objectives set forward in this land use plan. The BLM will apply mitigation measures and conservation actions to modify the operations of authorized lands uses or activities to meet these obligations. Additional direction regarding mitigation can be found in the Interim Policy, Draft - Regional Mitigation Manual Section - 1794 (IM 2013-142) or subsequent decision documents.

These measures and actions will be applied to avoid, minimize, rectify, reduce, and compensate for impacts if an evaluation of the authorization area indicates the presence of resources of concern which include, but are not limited to air, water, soils, cultural resources, national historic trails, recreation values and important wildlife habitat in order to reduce impacts associated with authorized land uses or activities such as road, pipeline, or powerline construction, fluid and solid mineral development, range improvements, and recreational activities. The mitigation measures and conservation actions for authorizations will be identified as part of the National Environmental Policy Act (NEPA) process, through interdisciplinary analysis involving resource specialists, project proponents, government entities, landowners or other Surface Management Agencies. Those measures selected for implementation will be identified in the Record of Decision (ROD) or Decision Record (DR) for those authorizations and will inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands and minerals to mitigate impacts from those authorizations. Because these actions create a clear obligation for the BLM to ensure any proposed mitigation action adopted in the environmental review process is performed, there is assurance that mitigation will lead to a reduction of environmental impacts in the implementation stage and include binding mechanisms for enforcement (CEQ Memorandum for Heads of Federal Departments and Agencies 2011).

Because of site-specific circumstances and localized resource conditions, some mitigation measures and conservation actions may not apply to some or all activities (e.g., a resource or conflict is not present on a given site) and/or may require slight variations from what is described in this appendix. The BLM may add additional measures as deemed necessary through the environmental analysis and as developed through coordination with other federal, state, and local regulatory and resource agencies. Application of mitigation measures and conservation actions is subject to valid existing rights, technical and economic feasibility.

Implementation and effectiveness of mitigation measures and conservation actions would be monitored to determine whether the practices are achieving resource objectives and accomplishing desired goals. Timely adjustments would be made as necessary to meet the resource goals and objectives.

The list included in this appendix is not limiting, but references the most frequently used sources. The BLM may add additional site-specific restrictions as deemed necessary by further environmental analysis and as developed through coordination with other federal, state, and local regulatory and resource agencies. Because mitigation measures and conservation actions change or are modified, based on new information, the guidelines will be updated periodically. As new publications are developed; the BLM may consider those BMPs. In addition, many BLM handbooks (such as BLM Manual 9113-Roads and 9213-Interagency Standards for Fire and Aviation Operation) also contain BMP-type measures for minimizing impacts. These BLM-specific guidance and direction documents are not referenced in this appendix. The EIS for this RMP does not decide or dictate the exact wording or inclusion of these mitigation measures and conservation actions. Rather, they are used in the RMP and EIS process as a tool to help demonstrate at the Land Use Plan scale how they will be applied in considering subsequent activity plans and site-specific authorizations. These mitigation measures and conservation actions and their wording are matters of policy. As such, specific wording is subject to change, primarily through administrative review, not through the RMP and EIS process. Any further changes that may be made in the continuing refinement of these mitigation measures and conservation actions and any

development of program-specific standard procedures will be handled in another forum, including appropriate public involvement and input.

GENERAL MITIGATION MEASURES AND CONSERVATION ACTION RESOURCES

Air Resource BMPs

Developed by: Bureau of Land Management

Publication reference: BLM/WO Updated May 9, 2011

Available from: Online at:

http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/technical_information.html

Description: Identifies a range of typical Best Management Practices for protecting air resources during oil and gas development and production operations.

Erosion and Sediment Control Practices: Field Manual

Developed by: Prepared for the Montana Department of Transportation

Publication reference: FHWA/MT-030003/8165

Available from: National Technical Information Service, Springfield, VA 21161

Description: The Erosion and Sediment Control Best Management Practices Construction Field Manual was developed to assist in design, construction, and post-construction phases of MDT projects. This manual provides background to concepts of Erosion and Sediment Control. Most of MDT's Best Management Practices are listed within the manual based on application categories. Each BMP is described; its applications and limitations are listed, as well as its design criteria. Construction phase and post-construction phase BMPs are described. This manual is a field guide and condensed version of the Erosion and Sediment Control Design Construction Best Management Practices Manual. For more detailed discussion on topic found within, refer to the Erosion and Sediment Control Construction Best Management Practices Manual.

Erosion and Sediment Control Practices: Reference Manual

Developed by: Prepared for the Montana Department of Transportation

Publication reference: FHWA/MT-030003/8165

Available from: National Technical Information Service, Springfield, VA 21161

Description: The Erosion and Sediment Control Construction Best Management Practices Manual was developed to assist in the design, construction, and post-construction phases of Montana Department of Transportation (MDT) projects. This manual provides background to State and Federal regulations associated with erosion and sediment control practices including a general overview of the erosion and sediment processes. Best management practices are listed within the manual based on application categories. Each BMP is described; its applications and limitations are listed, as well as its design criteria. The design phase includes development of construction plans, notice of intent (NOI), and stormwater pollution prevention plan (SWPPP). Construction phase includes the finalization of the SWPPP, NOI, and the implementation of BMPs. Post-construction phase includes monitoring, maintenance, and removal activities.

Fluid Minerals BMPs

Developed by: Bureau of Land Management

Publication reference: BLM/WO/ST-06/021+3071

Available from:

Online at: <http://www.blm.gov/bmp/>

Online at: <http://www.mt.blm.gov/oilgas/operations/goldbook/goldbook1.html>

Online at: http://www.mt.blm.gov/oilgas/operations/goldbook/Stand_Enviro_Color.pdf

Online at: <http://www.mt.blm.gov/oilgas/operations/color.pdf>

Description: BMPs for oil and gas demonstrate practical ideas which may eliminate or minimize adverse impacts from oil and gas development to public health and the environment, landowners, and natural resources; enhance the value of natural and landowner resources; and reduce conflict. The publication reference is to the "Gold Book" which is formally titled "Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development." In addition, the first internet citation is to a location maintained by the Washington Office of the BLM containing general and technical information on the use and application of BMPs. The second

location refers the reader directly to an online version of the “Gold Book.” The third and fourth locations refer the reader to color charts for use in selecting paint colors for oil and gas facilities.

Montana Guide to the Streamside Management Zone Law

Developed by: Montana Department of Natural Resources and Conservation Service Forestry Bureau, in cooperation with Montana Department of Environmental Quality, Montana Logging Association, Montana Wood Products Association, Plum Creek Timber LP, USDA Forest Service, USDI Bureau of Land Management

Publication reference: Revised August 2002

Available from: Montana Department of Natural Resources and Conservation, 2705 Spurgin Road, Missoula MT 59801-3199, (406)542-4300, or local MT DNRC field office.

Description: The Montana Guide to the Streamside Management Zone Law is a field guide to compliance with State of Montana Law 77-5-301[1] MCA.) Complementary BMPs are found in the Water Quality BMPS for Montana Forests (also referenced in this appendix). Provides definitions, stream classifications, and guidelines on the seven forest practices prohibited by Montana law in SMZs (broadcast burning, operation of wheeled or tracked vehicles except on established roads, the forest practice of clear-cutting, the construction of roads except when necessary to cross a stream or wetland; the handling, storage, application, or disposal of hazardous or toxic materials in a manner that pollutes streams, lakes, or wetlands, or that may cause damage or injury to humans, land, animals, or plants; the side casting of road material into a stream, lake, wetland, or watercourse; and the deposit of slash in streams, lakes, or other water bodies.

Montana Non-Point Source Management Plan

Developed by: Montana Department of Environmental Quality, Water Quality Planning Bureau, Watershed Protection Section

Publication reference: 2007

Available from: Montana Department of Environmental Quality, Water Quality Planning Bureau, Watershed Protection Section, P.O. Box 200901, Helena, MT 59620-0901.

Online at: <http://www.deq.state.mt.us/wqinfo/nonpoint/2007NONPOINTPLAN/Final/NPSPlan.pdf>

Description: This document describes the Montana Department of Environmental Quality’s (DEQ) updated strategy for controlling nonpoint source (NPS) water pollution, which is the state’s single largest source of water quality impairment. NPS pollution is contaminated runoff from the land surface that can be generated by most land use activities, including agriculture, forestry, urban and suburban development, mining, and others. Common NPS pollutants include sediment, nutrients, temperature, heavy metals, pesticides, pathogens, and salt. The purpose of the Montana NPS Pollution Management Plan (Plan) is: 1) to inform the state’s citizens about NPS pollution problems; and 2) to establish goals, objectives, and both long-term and short-term strategies for controlling NPS pollution on a statewide basis. The goal of Montana’s NPS Management Program is to protect and restore water quality from the impacts of non-point sources of pollution in order to provide a clean and healthy environment.

Montana Placer Mining BMPs

Developed by: Montana Bureau of Mines and Geology

Publication reference: Special Publication 106, October 1993

Available from: Montana Bureau of Mines and Geology, Main Hall, Montana College of Mineral Science and Technology, Butte MT 59701

Description: Provides guidelines for planning, erosion control, and reclamation in arid to semi-arid, alpine, and subalpine environments, to prevent or decrease environmental damage and degradation of water quality.

Water Quality BMPs for Montana Forests

Developed by: Montana State University Extension Service

Publication reference: Logan, R. 2001. Water Quality BMPs – Best Management Practices for Montana Forests. EB158, MSU Extension Forestry, Missoula, MT. 58 pp.

Available from: MSU Extension Forestry, 32 Campus Dr., Missoula MT 59812, OR MSU Extension Publications, PO Box 172040 Bozeman MT 59717

Description: Discusses methods for managing forest land while protecting water quality and forest soils. Intended for all forest land in Montana, including non-industrial private, forest industry, and state or federally-owned forests. These are preferred (but voluntary) methods that go beyond Montana State Law (Streamside

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Management Zones). Includes definitions, basic biological information, and BMPs for Streamside Management Zones; road design, use, planning and locating, construction, drainage, and closure; stream crossings, soil, timber harvesting methods, reforestation, winter planning, and clean-up.

Wind Energy BMPs

Developed by: Bureau of Land Management

Publication reference: Wind Energy Development Programmatic EIS

Available from: FEIS Chapter 2 (section 2.2.3.2) at <http://windeis.anl.gov/>

Description: As part of the proposed action, BLM developed BMPs for each major step of the wind energy development process, including site monitoring and testing, plan of development preparation, construction, operation, and decommissioning. General BMPs are available for each step, and certain steps also include specific BMPs to address the following resource issues: wildlife and other ecological resources, Visual resources, Roads, Transportation, Noise, Noxious Weeds and Pesticides, Cultural/Historic Resources, Paleontological Resources, Hazardous Materials and Waste Management, Storm Water, Human Health and Safety, monitoring program, air emissions and excavation and blasting activities.

Communication Tower BMPs

Developed by: United States Fish and Wildlife Service

Publication reference: Service Guidance on the Siting, Construction, Operation and Decommissioning of Communications Towers

Available from: http://www.fws.gov/habitatconservation/com_tow_guidelines.pdf

Description: These guidelines were developed by Service personnel from research conducted in several eastern, mid-western, and southern States, and have been refined through Regional review. They are based on the best information available at this time, and are the most prudent and effective measures for avoiding bird strikes at towers.

- Any company/applicant/licensee proposing to construct a new communications tower should be strongly encouraged to collocate the communications equipment on an existing communication tower or other structure (e.g., billboard, water tower, or building mount). Depending on tower load factors, from 6 to 10 providers may collocate on an existing tower.
- If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level, using construction techniques which do not require guy wires (e.g., use a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Aviation Administration regulations permit.
- If constructing multiple towers, providers should consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.
- If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., State or Federal refuges, staging areas, rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.
- If taller (>199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.
- Tower designs using guy wires for support which are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major diurnal migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. (For guidance on markers, see Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison

- Electric Institute, Washington, DC., 78 pp, and Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices/or Raptor Protection on Power Lines. Edison Electric Institute by Raptor Research Foundation, Washington, D. C; 128 pp. Copies can be obtained via the Internet at <http://www.eei.org/resources/pubcat/enviro/>. or by calling 1-800/334-5453).
- Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance, and to reduce above ground obstacles to birds in flight.
 - If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation to an alternate site should be recommended. If this is not an option, seasonal restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.
 - In order to reduce the number of towers needed in the future, providers should be encouraged to design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.
 - Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.
 - If a tower is constructed or proposed for construction, Service personnel or researchers from the Communication Tower Working Group should be allowed access to the site to evaluate bird use, conduct dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, Global Positioning System, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.
 - Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

Grazing Management BMPs (Guidelines)

Guidelines for grazing management are the types of grazing management methods and practices determined to be appropriate to ensure that rangeland health standards can be met or significant progress can be made toward meeting the standards. Guidelines are best management practices (BMP), treatments, and techniques and implementation of range improvements that will help achieve rangeland health standards. Guidelines are flexible and are applied on site specific situations. Standards for Rangeland Health and Guidelines for Livestock Grazing Management for the Miles City Field Office can be found at:

<http://www.blm.gov/mt/st/en/prog/grazing.html>

BLM BMPs

The website below provides an introduction to BLM BMPs with links to BLM contacts, General BMP Information, BMP Frequently Asked Questions, BMP Technical Information, Oil and Gas Exploration—The Gold Book, Specific Resource BMPs, and, other BLM links.

- <http://www.blm.gov/bmp/>

Visual Resources

The website below provides numerous design techniques that can be used to reduce the visual impacts from surface-disturbing projects. The techniques described here should be used in conjunction with BLM's visual resource contrast rating process wherein both the existing landscape and the proposed development or activity are analyzed for their basic element of form, line, color, and texture.

- http://www.blm.gov/pgdata/content/wo/en/prog/Recreation/recreation_national/RMS.html

Renewable Energy Development

The following resources provide information on BMPs related to renewable energy development.

- Wind Energy Development Programmatic Environmental Impact Statement:
<http://windeis.anl.gov/documents/fpeis/index.cfm>

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- BLM Instruction Memorandum 2009-043, Rights-of-Way, Wind Energy:
http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/TM_2009-043.htm.
- Solar Energy Development Programmatic Environmental Impact Statement:
<http://www.solareis.anl.gov/>

Healthy Watersheds

The website below provides conservation approaches and tools designed to ensure healthy watersheds remain intact. It also provides site-specific examples.

- <http://www.epa.gov/owow/nps/>

Storm Water BMPs

The website below provides BMPs designed to meet the minimum requirements for six control measures specified by the EPA's Phase II Stormwater Program.

- <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>

Pasture, Rangeland, and Grazing Operations BMPs

The website below provides BMPs compiled by the EPA to prevent or reduce impacts associated with livestock grazing.

- <http://www.epa.gov/oecaagct/anprgbmp.html>

National Range and Pasture Handbook

The website below provides procedures in support of NRCS policy for the inventory, analysis, treatment, and management of grazing land resources.

- <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/landuse/rangepasture/?cid=stelprdb1043084>

Montana Nonpoint Source Management Program

The website below provides links to information on funding for implementing nonpoint source controls, examples of control projects, and Montana's current Nonpoint Source Management Plan. This plan identifies and provides details for BMPs to improve and maintain water quality.

- <http://www.deq.mt.gov/wqinfo/nonpoint/nonpointsourceprogram.mcp>

THE FOLLOWING WOULD BE APPLIED, IF WARRANTED, TO ANY BLM AUTHORIZED ACTIVITY

- The total disturbance area would be minimized and to the extent possible.
- Surface disturbances would be co-located in areas of previous or existing disturbance to the extent technically feasible.
- Linear facilities would be located in the same trenches (or immediately parallel to) and when possible, installed during the same period of time.
- Plans of development would be required for major ROWs, renewable energy and minerals development. Such plans would identify measures for reducing impacts.
- Where the federal government owns the surface and the mineral estate is in nonfederal ownership, the BLM would apply appropriate fluid mineral BMPs to surface development.
- Remove facilities and infrastructure when use is completed.
- Vegetation would be removed only when necessary. Mowing would be preferred. If mowed when possible work would be performed when vegetation is dormant.
- Two-track (primitive) roads would be used when possible.
- Utilization of the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (i.e., The Gold Book) shall be utilized for the design of roads, utilities, and oil and gas operations.

- Directional drilling, drilling multiple wells from the same pad, co-mingling, recompletion, or the use of existing well pads would be employed to the extent technically feasible to minimize surface impacts from oil and gas development.
- Utilities would be ripped or wheel-trenched whenever practical.
- Remote telemetry would be used to reduce vehicle traffic to the extent technically feasible (e.g., monitoring oil and gas operations).
- Perennial streams would be crossed using bore crossing (directional drill) or other environmentally sound method.
- For activities resulting in major surface-disturbance as determined by the AO, a mitigation monitoring and reporting strategy would be developed and implemented (see the Reclamation Appendix for further guidance).
- Operations would avoid sensitive resources including riparian areas, wetlands, floodplains, waterbodies and areas subject to erosion and soil degradation.
- The BLM would, on a case-by-case basis, use temporary or permanent enclosures (e.g., in woody draw or riparian areas) to promote species diversity, recruitment, and structure.
- Accelerated erosion, soil loss, and impacts to water quality would be reduced by diverting stormwater and trapping sediment during activity.
- Pitless or aboveground closed-loop drilling technology would be used to the extent technically feasible. Recycle drilling mud and completion fluids for use in future drilling activities.
- Where needed, pits would be lined with an impermeable liner. Pits would not be placed in fill material or natural watercourses, and pits may not be cut or trenched.
- Fertilizer would not be applied within 500 feet of wetlands and waterbodies.
- Vehicle and equipment servicing and refueling activities would take place 500 feet from the outer edge of riparian areas, wet areas, and drainages.
- Activity may be restricted during wet or frozen conditions. Mechanized equipment use would be avoided if the equipment causes rutting to a depth of 4 inches or greater.
- Vehicle wash stations would be used prior to entering or leaving disturbance to reduce the transport and establishment of invasive species.
- Invasive species plant parts would not be transported off site without appropriate disposal measures.
- Use alternative energy (solar or wind power) to power new water source developments.
- Overhead power lines, where authorized would follow the recommendations in the most recent guidance from the Avian Power Line Interaction Committee (1994, as amended 2006, 2012).
- Weed management prescriptions would be included in all new treatment projects and incorporated into existing contracts, agreements, task forces, designated weed-free management areas, and land use authorizations that resulted in ground-disturbing activities.
- Whenever possible, ROWs would be constructed within or next to compatible ROWs, such as roads, pipelines, communications sites, and railroads.
- The operator shall be responsible for locating and protecting existing pipelines, power lines, communication lines, and other related infrastructure.
- Modify or adapt livestock water pipelines and natural springs, where practical, to create small wet meadows to provide wildlife habitat.
- Authorize new water development resulting from diversion from spring or seep source only when wildlife habitat would benefit from the development. This includes new water sources for livestock as part of an AMP/conservation plan to improve wildlife habitat.
- Analyze spring, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within wildlife habitats. Make modifications where necessary, considering impacts to other water uses when such considerations are neutral or beneficial to wildlife.
- If portions of existing fences or other structures are found to pose a significant threat to wildlife as strike sites, raptor perches, connectivity barriers, etc. mitigate effects through removal, moving or modification; increase visibility of the fences by marking, or through the use of “take-down” fences.
- Evaluate ecological consequences of using pesticides to control grasshoppers or other insects, unless NEPA analysis documents benefits to avian species and their habitat.
- Design new structural range improvement and locate supplements (salt or protein blocks) to conserve or enhance wildlife habitat. Structural range improvements in this context include, but not limited to: cattleguards, fences, exclosures, corrals, or other livestock handling structures; pipelines; troughs; storage

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tanks (including moveable tanks used in livestock water hauling); windmills; ponds or reservoirs; and spring developments.

- During drought periods, prioritize evaluating effects of the drought in priority wildlife habitat areas relative to their needs for food and cover.